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Development of a Turnkey H2 Fueling Station

DOE New Project Kick-off Meeting

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Turnkey Fueling Station Development

- **Goal:**
  - To achieve commercial cost viability for a stand-alone, fully integrated, **H2 Fueling Station** based on reforming of natural gas.
- **Project Duration:**
  - 9 Quarters
- **Estimated Funding:**
  - $ 7.1 MM Program
- **Contractors:**
  - APCI
  - Subcontractors: H2Gen, Penn State, Others possible

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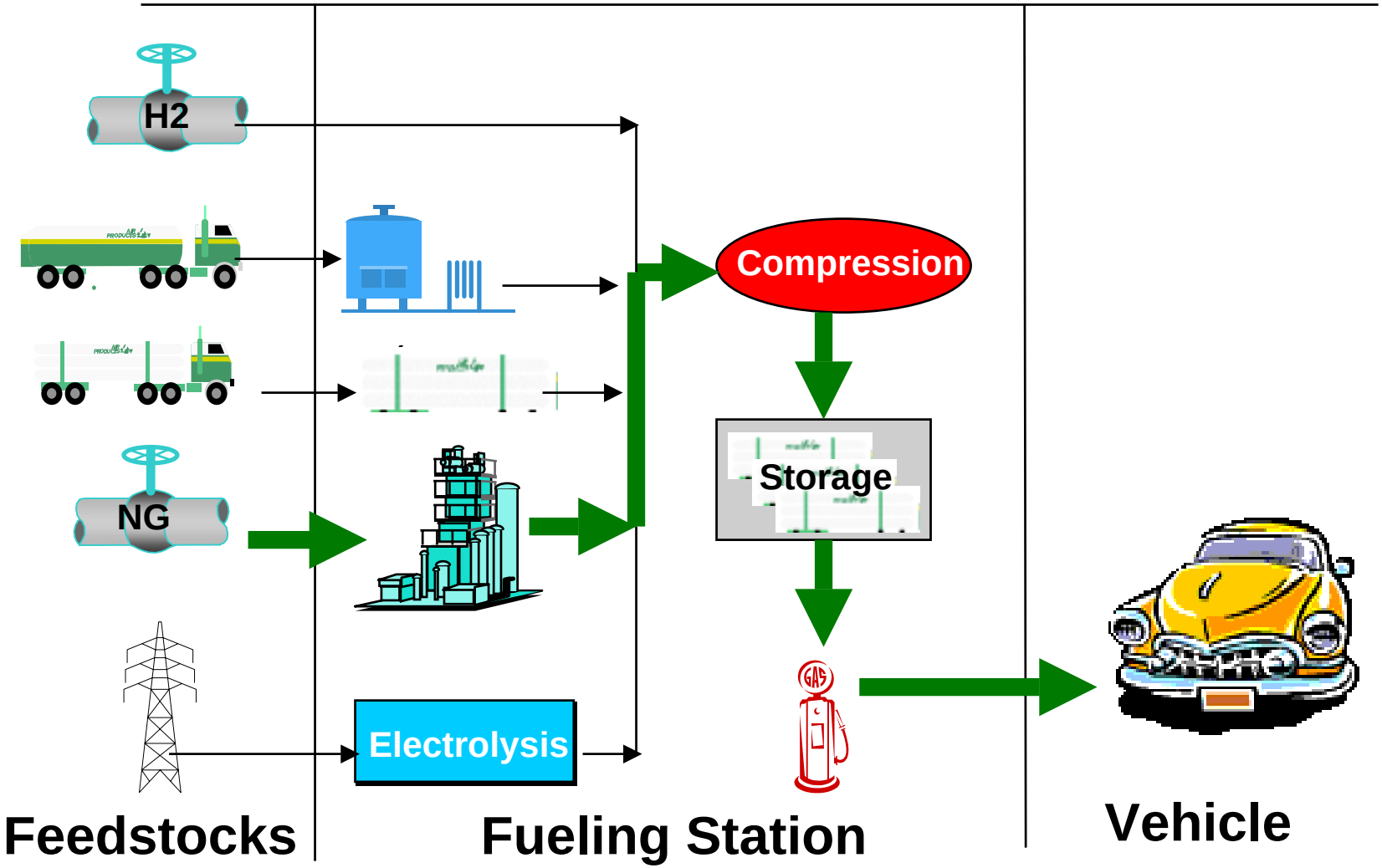
Scope of H2 Fueling Station Project

Direct Hydrogen Supply Modes



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Technical Concepts / Challenges

- **Reformer**
  - Use natural gas, tap water.
  - Packaging, Fast-start capability, national and int'l codes
- **PSA**
  - New adsorbent and cycle development.
  - Simple operation
- **Compression and Storage**
  - Cost effective, quiet.
- **Dispenser**
  - Communication with vehicle. Interface with customer – aesthetics.
  - Code adherence, leak detection.
- **System**
  - Cost effective – commercially viable
  - Compact
  - Safe

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Project Timeline

- **Phase 1 – Conceptual Design and Economic Evaluation**
  - Subsystem Conceptual Designs Costed
  - Reformer catalyst & equip., PSA, compression, storage, dispenser
  - **4 Months**
- **Phase 2 – Subsystem Development**
  - Development and Lab testing of All Components
  - **9 Months**
- **Phase 3 – System Deployment**
  - Scale-up & detailed engineering
  - Fabrication & installation at Penn State
  - Operation and Testing
  - **6 Months - Design & Fabrication**
  - **3 Months - Delivery & Install**
  - **6 Months - Operation/Testing**

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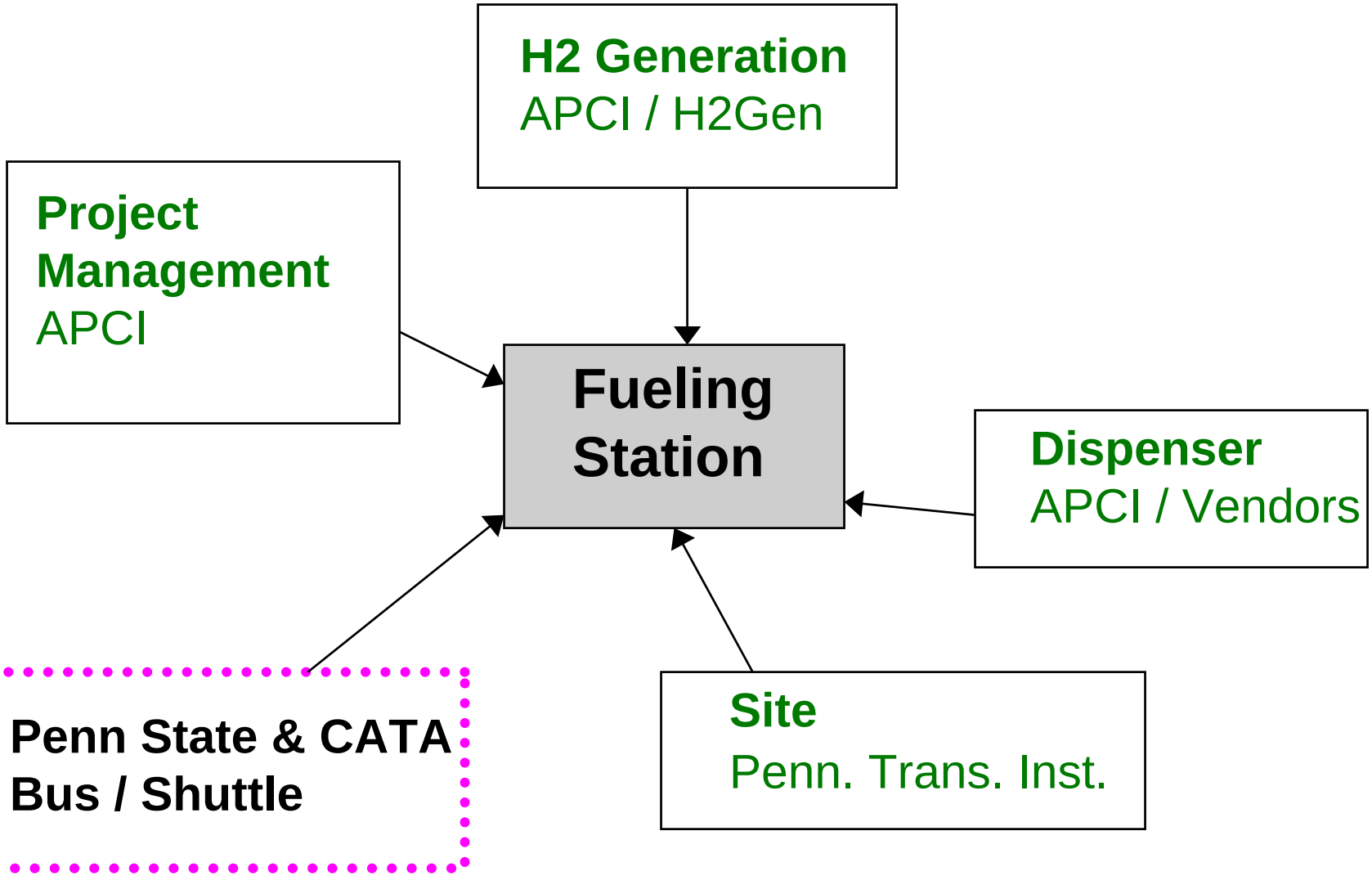

Goals

- **An Operational, Commercial H2 Fueling Station at Penn State**
  - Safe, cost-effective
  - Early 2004 On-Stream
- **We expect to have this available as a standard product for H2 fueling stations.**
- **We expect to apply this technology into other applications such as energy stations and power parks.**